



(19)

Europäisches Patentamt  
European Patent Office  
Office européen des brevets



(11)

EP 0 867 151 A3

(12)

## EUROPEAN PATENT APPLICATION

(88) Date of publication A3:  
02.08.2000 Bulletin 2000/31

(51) Int Cl.7: A61B 17/36

(43) Date of publication A2:  
30.09.1998 Bulletin 1998/40

(21) Application number: 98400687.4

(22) Date of filing: 25.03.1998

(84) Designated Contracting States:  
AT BE CH DE DK ES FI FR GB GR IE IT LI LU MC  
NL PT SE

Designated Extension States:  
AL LT LV MK RO SI

(30) Priority: 25.03.1997 JP 7238497

(72) Inventor: Omori, Shigeru  
Ashigarakami-gun, Kanagawa-ken (JP)

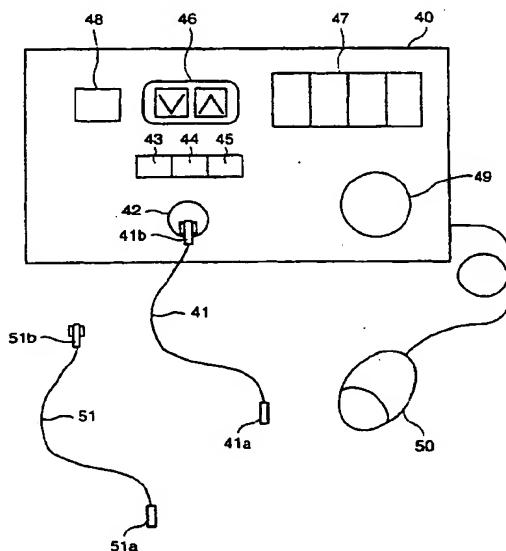
(74) Representative: Joly, Jean-Jacques et al  
Cabinet Beau de Loménie  
158, rue de l'Université  
75340 Paris Cédex 07 (FR)

(71) Applicant: TERUMO KABUSHIKI KAISHA  
Tokyo (JP)

### (54) Medical laser irradiation apparatus

(57) The apparatus (40) applies laser beams of two or more wavelengths, incapable of transmitting in a quartz optical fiber, through the use of an optical fiber cable. It is easy to handle and producible at a low cost, and is also capable of making irradiation through the use of a relay optical fiber cable comprising a quartz optical fiber (41). For this purpose, this apparatus is composed of a laser irradiation apparatus to output laser beams of a plurality of wavelengths capable of being transmitted by a quartz optical fiber, and two or more kinds of irradiation optical fiber cables including an optical fiber cable having a quartz optical fiber and containing a solid state laser medium and/or a nonlinear optical crystal at its tip portion. Thus, by using properly the plurality of irradiation optical fiber cables, it is possible to apply laser beams of two or more kinds of wavelengths, incapable of being transmitted by a quartz optical fiber, to an appropriate place through the use of one small-sized laser generating means.

FIG. 1





European Patent  
Office

## EUROPEAN SEARCH REPORT

Application Number  
EP 98 40 0687

DOCUMENTS CONSIDERED TO BE RELEVANT			CLASSIFICATION OF THE APPLICATION (IntCL6)
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	
X	EP 0 325 836 A (BARD INC C R) 2 August 1989 (1989-08-02)	1,3,6,10	A61B17/36
Y	* column 6, line 41 - line 46; figure 2 * * column 10, line 12 - line 19; figure 6 *	2,4,7-9, 11	
Y	US 4 580 557 A (HERTZMANN PETER) 8 April 1986 (1986-04-08)	2	
A	* column 6, line 27 - line 36; figure 3 *	5	
Y	EP 0 450 149 A (HEALTH RESEARCH INC) 9 October 1991 (1991-10-09) * column 4, line 52 - line 57 *	4	
Y	EP 0 565 843 A (ADLAS GMBH & CO KG) 20 October 1993 (1993-10-20) * column 12, line 39 - line 50; figure 6 *	7-9	
Y	PATENT ABSTRACTS OF JAPAN vol. 007, no. 292 (E-219), 27 December 1983 (1983-12-27) & JP 58 166783 A (NIHON SEKIGAISEN KOGYO KK), 1 October 1983 (1983-10-01)	11	TECHNICAL FIELDS SEARCHED (IntCL6)
A	* abstract *	1	A61B G02B
A	EP 0 652 614 A (TERUMO CORP) 10 May 1995 (1995-05-10) * column 4, line 37 - line 42; figure 4 *	1	
A, P	PATENT ABSTRACTS OF JAPAN vol. 1997, no. 09, 30 September 1997 (1997-09-30) & JP 09 129949 A (TERUMO CORP), 16 May 1997 (1997-05-16) * abstract *	1	
The present search report has been drawn up for all claims			
Place of search	Date of completion of the search	Examiner	
THE HAGUE	8 June 2000	Mayer, E	
CATEGORY OF CITED DOCUMENTS		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document			

ANNEX TO THE EUROPEAN SEARCH REPORT  
ON EUROPEAN PATENT APPLICATION NO.

EP 98 40 0687

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EPO file on. The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

08-06-2000

Patent document cited in search report		Publication date	Patent family member(s)		Publication date
EP 0325836	A	02-08-1989	US	4852567 A	01-08-1989
			AU	2766889 A	27-07-1989
			JP	2116384 A	01-05-1990
US 4580557	A	08-04-1986	US	4722337 A	02-02-1988
EP 0450149	A	09-10-1991	US	5074632 A	24-12-1991
			AT	138741 T	15-06-1996
			AU	641192 B	16-09-1993
			AU	6565190 A	12-09-1991
			CA	2028757 A,C	08-09-1991
			CN	1054669 A,B	18-09-1991
			CS	9100602 A	15-10-1991
			DE	69027204 D	04-07-1996
			DE	69027204 T	21-11-1996
			FI	911117 A	08-09-1991
			HU	60396 A	28-08-1992
			IL	96317 A	25-01-1994
			JP	4218002 A	07-08-1992
			KR	180558 B	01-04-1999
			PH	27174 A	02-04-1993
			PL	165353 B	30-12-1994
			PT	96934 A	29-01-1993
			ZA	9008982 A	27-05-1992
EP 0565843	A	20-10-1993	DE	4238434 A	21-10-1993
			DE	59309763 D	14-10-1999
			JP	6018750 A	28-01-1994
JP 58166783	A	01-10-1983	NONE		
EP 0652614	A	10-05-1995	JP	7106665 A	21-04-1995
			DE	69416080 D	04-03-1999
			DE	69416080 T	05-08-1999
			US	5568503 A	22-10-1996
JP 09129949	A	16-05-1997	NONE		